UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/871,421 | 05/31/2001 | Todd R. Williams | 56523USA1A.002 | 9279 |

32692 7590 01/13/2003

3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

| EXAMINER | |
|---|---|
| FLETCHER III, WILLIAM P | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1762 | |

DATE MAILED: 01/13/2003 5

Please find below and/or attached an Office communication concerning this application or proceeding.

SB

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/871,421 | WILLIAMS ET AL. | |
| | Examiner | Art Unit | |
| | William P. Fletcher III | 1762 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 October 2002 (Paper No. 4)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) *14-23 and 35-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,13,24-30,32 and 34* is/are rejected.

7)☒ Claim(s) *10,12,31 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED OFFICE ACTION

I. Response to Election

Applicant's election with traverse of claims 1 - 14 and 24 - 34 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that: (1) a search of the prior art with respect to the method claims would reveal prior art relevant to the article claims, and *vice versa;* (2) the mere fact that the method and article claims are classified in different subclasses should not be sufficient to require a restriction; and (3) the restriction requirement places an undue burden on the assignee of the application. This is not found persuasive.

There are two criteria for a proper requirement for restriction between patentably distinct inventions:

(A) The inventions must be independent [see MPEP § 802.01, § 806.04, § 808.01] or distinct as claimed [see MPEP § 806.05 - § 806.05(i)]; and

(B) There must be a serious burden on the examiner if restriction is required [see MPEP § 803.02, § 806.04(a) - § 806.04(i), § 808.01(a), and § 808.02].

With respect to (A), the inventions are distinct as set-forth in paragraph 2 of Paper No. 3. It is noted that examiners must provide reasons and/or examples to support conclusions, but need not cite documents to support the restriction requirement [see MPEP § 803 and § 806.05(f)].

With respect to (B), for the purposes of the initial requirement, a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in MPEP § 808.02. This was set-forth in Paragraph 3 of Paper No. 3. The separate classification of related inventions shows that each distinct subject has attained recognition in the art as a separate subject for inventive effort, and also a separate field of search [see MPEP § 808.02]. While a search of one invention may yield art relevant to the other, a serious burden exists because of the differing issues arising from the simultaneous prosecution of inventions which are separate subjects of inventive effort and separate fields of search.

The *prima facie* showing of serious burden may be rebutted by appropriate showings or evidence, which the applicant has not done [see MPEP § 803].

Additionally, it is noted that serious burden on applicant is not a factor considered when requiring a restriction.

The requirement is still deemed proper and is therefore made FINAL.

Claims 14 - 23 and 35 - 50 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non-elected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 4.

II. Form & Content of Application

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: METHOD OF MAKING DIMENSIONALLY STABLE COMPOSITE ARTICLE.

III. Claim Analysis

The following analysis is designed to alert applicant to the examiner's interpretation of claim terminology when applying prior art.

The term "large scale predictable dimensional stability," appearing in claims 1, 5, 24, and 27, has been interpreted as defined at p. 7, l. 29 - p. 8, l. 3 of the specification. The examiner notes that the definition is inclusive merely of ambient conditions.

The term "radiation transmissive metal foil," appearing in claims 1, 5, 24, and 27, has been interpreted as defined at p. 8, ll. 5 - 8 of the specification. The examiner has interpreted the foil backing as required to be transmissive to the curing radiation only when the composition is cured through the foil (i.e., claims 1 and 24). In all other instances, it is the examiner's position that all metal foils are inherently transmissive to at least one form of radiation (i.e., claims 5 and 27).

## IV. Rejections under 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the inventions was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent,

except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**1. Claims 5, 6, 11, 13, 27, 28, 32, and 34** are rejected under 35 U.S.C. § 102(e) as being anticipated by Delaney et al. {US 6,358,442 B1; filed 19 March 1997; published 19 March 2002}.

Delaney et al. teach a method of making a composite article comprising: depositing a radiation curable composition onto the surface of a backing [c. 2, ll. 42 - 47], contacting a master with a preformed surface under sufficient pressure to impart the pattern to the layer of composition [c. 2, ll. 48 - 52], exposing the layer to sufficient radiation to cure it [c. 2, ll. 52 - 55], and separating the cured polymer layer and the backing from the master [c. 2, ll. 55 - 57].

Delaney et al. teach that the backing may be a metal foil [c. 4, l. 62]. It is the examiner's position that this backing

is radiation transmissive, in the sense explained in section III above. The preformed surface of the master is a pattern of fine lines [c. 3, ll. 31 - 33]. It is the examiner's position that this pattern of fine lines reads on applicant's claimed three-dimensional microstructure as described at pp. 7 - 8 of the specification. Further, with respect to claim 27, it is the examiner's position that this pattern also reads on the interactive functional discontinuities as defined at p. 7 of the specification. Although Delaney et al. do not explicitly state that exposure is through the master, it is clearly illustrated as such in Figs. 1B, 2A, and 3.

With respect to claims 6 and 28, insofar as the radiation curable compositions are polymeric, they read on being oligomeric as defined at pp. 7 - 8 of the specification [c. 4, ll. 28 - 59].

With respect to claims 11, 13, 32, and 34, Delaney et al. teach that the radiation may be electron beam (EB) or ultraviolet (UV) [Fig. 3 and c. 3, l. 60]. It is the examiner's position that actinic radiation is inclusive of UV radiation according to the ordinary definition of the term "actinic (rays)": Rays in the violet and ultraviolet regions which produce chemical changes [*Hackh's Chemical Dictionary, 4th Ed.*, p. 15].

## V. Rejections under 35 U.S.C. §§ 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**2. Claims 5, 6, 11, 13, 27, 28, 32, and 34** are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Kerr et al. {WO 90/15673}.

Kerr et al. teach a method of making a composite article comprising: depositing a radiation curable composition onto the surface of a backing [p. 6, l. 33 - p. 7, l. 5], contacting a master with a preformed surface under sufficient pressure to impart the pattern to the layer of composition [p. 4, ll. 8 - 14], exposing the layer to sufficient radiation to cure it [p. 5, ll. 4 - 16], and separating the cured polymer layer and the backing from the master [p. 7, ll. 27 - 33].

Kerr et al. teach that the backing may be a metallic sheet [p. 5, l. 33]. It is the examiner's position that the metallic sheet of Kerr et al. is inclusive of a melt foil. If, in the alternative, the metallic sheet is not inclusive of a metal foil backing, it would have been obvious to one of ordinary skill in the art to utilize a metal foil backing. One of ordinary skill in the art would have been motivated to do so by the teaching of Kerr et al. that "virtually any flat substrate" may be used and the fact that metal foil is well-known in the art as a backing for patterned, radiation cured coatings. It is the examiner's position that this backing is radiation transmissive, in the sense explained in section III above.

It is the examiner's position that the pattern of cavities and depressions on the impressor belt, imparted to the coating, reads on applicant's claimed three-dimensional microstructure as

described at pp. 7 - 8 of the specification [p. 5, ll. 24 - 26]. Further, with respect to claim 27, it is the examiner's position that this pattern also reads on the interactive functional discontinuities as defined at p. 7 of the specification. Kerr et al. explicitly state curing the coating by irradiating through the impressor belt [p. 5, ll. 4 - 6].

With respect to claims 6 and 28, insofar as the radiation curable compositions are polymeric, they read on being oligomeric as defined at pp. 7 - 8 of the specification [p. 5, ll. 17 - 23].

With respect to claims 11, 13, 32, and 34, Kerr et al. teach that the radiation may be electron beam (EB) or ultraviolet (UV) [p. 5, ll. 4 - 16]. It is the examiner's position that actinic radiation is inclusive of UV radiation according to the ordinary definition of the term "actinic (rays)": Rays in the violet and ultraviolet regions which produce chemical changes [*Hackh's Chemical Dictionary, 4th Ed.*, p. 15].

VI. Rejections under 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**3. Claim 7** is rejected under 35 U.S.C. § 103(a) as being unpatentable over Delaney et al. {US 6,358,422 B1}.

The teaching of Delaney et al. is described in rejection 1 above. This reference does not teach that, after contact with the master, at least one portion of the polymer layer will in clued a distal surface portion distally spaced at least 0.05 mm from an adjacent depressed surface portion.

From the teaching of Delaney et al., it is quite clear that, while some particular dimensions of the pattern may be disclosed, the invention is not limited to these dimensions, and features of the pattern are at the discretion of the artisan to achieve a desired result [c. 3, ll. 20 - 55]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Delaney et al., so as to space the lines of the pattern

in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the teaching of Delaney et al. that the pattern may be modified at the discretion of the artisan to achieve a desired effect.

**4. Claims 8 and 29** are rejected under 35 U.S.C. § 103(a) as being unpatentable over Delaney et al. {US 6,358,442 B1}, as applied to claims 5 and 27, respectively, in further view of Schädlich et al. {US 3,897,247}.

The teaching of Delaney et al. is set forth in rejection 1 above.

Delaney et al. do not teach that the foil backing is selected from the group consisting of Cu, Al, Zn, Ti, Sn, Fe, Ni, AU, Ag, combinations and alloys thereof.

Schädlich teaches that, in the art of making composite holographic articles, it is well-known to utilize an aluminum foil backing [c. 1, l. 22]. Since Delaney et al. are silent with respect to the specific type of metal foil backing and Schädlich et al. teach Al foil as a well-known backing material, it would have been obvious to one of ordinary skill in the art to modify the process of Delaney et al. so as to utilize Al foil as the

metal foil backing, motivated by the teaching of Schädlich et al. to do so.

**5. Claims 1 - 4, 8, 9, 24 - 26, and 30** are rejected under 35 U.S.C. § 103(a) as being unpatentable over Delaney et al. {US 6,358,442 B1}, in view of Schädlich et al. {US 3,897,247}, Wood {US 4,566,927}, and Kerfeld {US 4,374,077}.

The teaching of Delaney et al. is described in rejection 1 above. Specifically, Delaney et al. teach a method of making holographic composite articles [c. 1, ll. 5 - 16].

Delaney et al. do not teach: with respect to claims 1 and 24, that the radiation curable composition is cured by irradiating through the metal foil backing; and, with respect to claims 4 and 26, that the foil backing is selected from the group consisting of Cu, Al, Zn, Ti, Sn, Fe, Ni, AU, Ag, combinations and alloys thereof.

Schädlich teaches that, in the art of making composite holographic articles, it is well-known to utilize an aluminum foil backing [c. 1, l. 22]. Since Delaney et al. are silent with respect to the specific type of metal foil backing and Schädlich et al. teach Al foil as a well-known backing material, it would have been obvious to one of ordinary skill in the art to modify

the process of Delaney et al. so as to utilize Al foil as the metal foil backing, motivated by the teaching of Schädlich et al. to do so.

Wood is cited merely to show that electron beams will penetrate Al foil to cure a resin coated thereon [c. 3, ll. 57 - 60].

Kerfeld teaches that, in the art of curing a radiation curable composition coated on a substrate in contact with a master, when the backing is transmissive to the curing radiation, curing may be effected by irradiating through the backing, and *vice versa* [c. 3, ll. 22 - 27]. Based on this teaching, one of ordinary skill in the art would have been motivated to modify the process of Delaney et al. in view of Schädlich et al. to irradiate through the Al foil backing instead of through the master. One of ordinary skill in the art would have been motivated to do so by the teaching of the equivalence of the two by Kerfeld. One of ordinary skill in the art would have had a reasonable expectation of successfully performing this modification based on the teaching of Wood.

With respect to claims 2 and 25, insofar as the radiation curable compositions are polymeric, they read on being oligomeric as defined at pp. 7 - 8 of the specification [c. 4, ll. 28 - 59].

With respect to claim 3, as noted in the rejection of claim 7 above, it would have been obvious to one of ordinary skill in the art to modify the method of Delaney et al., so as to space the lines of the pattern in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the teaching of Delaney et al. that the pattern may be modified at the discretion of the artisan to achieve a desired effect.

With respect to claims 9 and 30, Delaney et al. teach that the radiation may be electron beam (EB) [Fig. 3 and c. 3, l. 60].

**6. Claim 7** is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kerr et al. {WO 90/15673}.

The teaching of Delaney et al. is described in rejection 1 above. This reference does not teach that, after contact with the master, at least one portion of the polymer layer will in clued a distal surface portion distally spaced at least 0.05 mm from an adjacent depressed surface portion.

From the teaching of Kerr et al., it is quite clear that features of the pattern on the impressor belt are at the

discretion of the artisan to achieve a desired result [c. 3, ll. 20 - 55]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Kerr et al., so as to space the lines of the pattern in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully yielding a desired pattern.

VII. Allowable Subject Matter

**Claims 10, 12, 31, and 33** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither teaches nor reasonably suggests the methods of independent claims 1, 5, 24, and 27, in which the radiation is thermal radiation.

VIII. Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (703) 308-7956. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

William Phillip Fletcher III
Patent Examiner
United States Patent & Trademark Office
Group Art Unit 1762

*wpf*
January 9, 2003

SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700